

IME-03-008



June 10, 2004

IFW

To: Commissioner for Patents
P.O.Box 1450
Alexandria, VA 22313-1450

Fr: George O. Saile, Reg. No. 19,572
28 Davis Avenue
Poughkeepsie, N.Y. 12603

Subject: | Serial No. 10/822,201 04/09/04 |

My The Doan

VLSI-PHOTONIC HETEROGENEOUS
INTEGRATION BY WAFER BONDING

INFORMATION DISCLOSURE STATEMENT

Enclosed is Form PTO-1449, Information Disclosure Citation
In An Application.

The following Patents and/or Publications are submitted to
comply with the duty of disclosure under CFR 1.97-1.99 and
37 CFR 1.56.

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being
deposited with the United States Postal Service as first class
mail in an envelope addressed to: Commissioner for Patents,
P.O. Box 1450, Alexandria, VA 22313-1450, on June 17, 2004.

Stephen B. Ackerman, Reg.# 37761

Signature/Date

A handwritten signature that appears to read "S. B. Ackerman" followed by the date "6/17/04".

Kitigawa et al., "Hybrid Integration Technologies Using Planar Lightwave Circuits and Developed Components," IEICE Trans. Electron., Vol. E85-C, No. 4, April 2002, pp. 1009-1017, describes hybrid integration technologies that employ silica-based planar lightwave circuit (PLC) platforms, and reports several high-performance optical components based on these technologies.

Worhoff et al., "Design, Tolerance Analysis, and Fabrication of Silicon Oxynitride Based Planar Optical Waveguides for Communication Devices," Journal of Lightwave Technology, Vol. 17, No. 8, August 1999, pp. 1401-1407, describes the design of a waveguiding structure, demonstrates the practical feasibility of realizing this structure and discusses the preliminary measurement results.

The following two Patent Applications discuss a method of fabricating an integrated optical device:

- 1) International Patent Application WO 02/48765 A1 to Pandraud et al., "Integrated Optical Devices."
- 2) U.S. Patent Application US 2002/0076130 A1 to Pandraud, "Integrated Optical Device."

U.S. Patent Application US 2003/0091264 A1 to Kimerling, "Hybrid Integration of Electrical and Optical Chips," describes a hybrid device comprising an optical and an electronic chip.

U.S. Patent 6,455,398 to Fonstad, Jr. et al., "Silicon on III-V Semiconductor Bonding for Monolithic Optoelectronic Integration," discloses a method to form a hybrid integrated circuit device by bonding together a silicon wafer and a III-V semiconductor wafer, such as a GaAs wafer.

U.S. Patent 6,456,767 to Terashima, "Optical Waveguide Transmitter-Receiver Module," discloses an optical waveguide transmitter/receiver module.

U.S. Patent Application Publication US 2003/0140317 A1 to Brewer et al., "Process for Assembling Three-Dimensional Systems on a Chip and Structure thus Obtained," discloses various techniques for combining or for stacking substrates of differing composition.

U.S. Patent Application Publication US 2003/0002809 A1 to Jian, "Vertically Integrated Optical Devices Coupled to Optical Fibers," teaches an optical device where fibers are vertically integrated through the substrate layers.

U.S. Patent 6,020,624 to Wood et al., "Semiconductor Package with Bi-Substrate Die," describes a method to bond wafers together in a memory device.

U.S. Patent Application Publication US 2002/0171077 A1 to Chu et al., "Si/SiGe Optoelectronic Integrated Circuits," teaches a silicon and silicon germanium optoelectronic integrated circuit.

Akahori et al., "Assembly and Wiring Technologies on PLC Platforms for Low-Cost and High-Speed Applications," Proceeding of ECTC, 1997, pp. 632-637, describes the technologies used in the WDM transceiver module and the 10-Gbit/s optical transmitter and receiver modules.

Rieh et al., "Monolithically Integrated SiGe-Si PIN-HBT Front-End Photoreceivers," IEEE Photonics Technology Letters, Vol. 10, No. 3, March 1998, pp. 415-417, reports on fabrication and characterization of monolithically integrated SiGe-Si PIN-HBT transimpedance photoreceivers.

In the Bio-Otp Electronic Sensor Systems (BOSS) Center, a DARPA Optoelectronics Research Center, published on a web site: www.micro.uiuc.edu/boss/TaskII.html, the paper "Task II: Development of an Integrated Guided-Wave Interferometer-based Bio-Sensor System," relates to the topic of bio-sensors based on optical systems but does not disclose how to combine optical (III-V) wafers and silicon wafers.

Sincerely,


Stephen B. Ackerman, Reg.# 37761

Form PTO-1449 INFORMATION DISCLOSURE CITATION IN AN APPLICATION (Use several sheets if necessary)				Doctored Number (Optional) IME-03-008	Application Number 10/822,201		
				Applicant My The Doan			
				Filing Date 04/09/04	Group Art Unit Group 21 Unit		
U. S. PATENT DOCUMENTS							
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME		CLASS	SUBCLASS	ALIEN DATE IF APPROPRIATE
E 2004 ADEMARK OFFICE 88	60206242/1/00	Wood et al.			257	618	4/1/98
	64553989/24/02	Fonstad, Jr. et al.			438	459	7/14/00
	64567679/24/02	Terashima			385	49	3/28/01
FOREIGN PATENT DOCUMENTS							
	DOCUMENT NUMBER	DATE	COUNTRY		CLASS	SUBCLASS	TRANSLATION YES NO
	WO 02/48765A1	6/26/02	Int'l Patent Pub.		G02B	6/13	
OTHER DOCUMENTS (Including Author, Title, Date, Paragraphs Pages, Etc.)							
-	Kitigawa et al., "Hybrid Integration Technologies Using Planar Lightwave Circuits and Developed Components", IEICE Trans. Electron., Vol. E85-c, No. 4, April 2002, pp. 1009-1017						
-	Worhoff et al., "Design, Tolerance Analysis, and Fabrication of Silicon Oxynitride Based Planar Optical Waveguides for Communication Devices", Jnl. of Lightwave Tech., Vol. 17, No. 8, Aug. 1999, pp. 1401 - 1407.						
EXAMINER	DATE CONSIDERED						
<p>EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.</p>							

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Form PTO-1449 INFORMATION DISCLOSURE CITATION IN AN APPLICATION (Use several sheets if necessary)	Docket Number (Optional) IME-03-008	Application Number 10/8222,201
	Applicant My The Doan	
	Filing Date 04/09/04	Group Art Unit

U. S. PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						YES	NO

OTHER DOCUMENTS (including Author, Title, Date, Portion and Pages, Etc.)

- Bio-Opt Electronic Sensor Systems (BOSS) Center,
DARPA Optoelectronics Research Center, published
on web site: www.micro.uiuc.edu/boss/TaskII.html,
"Task II : Development of an Integrated Guided-
Wave Interferometer-based Bio-Sensor System."

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.

